



United States
Department of
Agriculture

Forest
Service

Southwestern Region
Forest Health
Arizona Zone Office

2500 S. Pine Knoll Drive
Flagstaff, AZ 86001-6381
FAX (928) 556-2130
Voice (928) 556-2073

File Code: 3420
Route To:

Date: October 12, 2005

Subject: Post Treatment Evaluation for Bark Beetles, Pinaleno Mt., Safford RD, Coronado NF

To: District Rangers, Safford RD, Coronado NF

On September 1, 2005 Lisa Angle, Forester on the Safford RD, Coronado NF, and I conducted a post treatment evaluation on MCH treatments on the Pinaleño Mountains. One set of treatments was applied to several recreation and summer home sites and the other on red squirrel midden sites at a moderate to high risk to tree mortality from bark beetles. This report is a summation of our survey results and observations of treatment efficacy and current bark beetle activities in the area. Also included are a summary of past treatments and a discussion of future actions needed.

Recreation and Summer Home sites

Background. Spruce beetle activity on the Pinaleño Mountains has been at outbreak levels for several years since the mid 1990's. In some areas spruce mortality has reach 80-90 percent with trees as small as 6 inches dbh being attacked and killed. Many of the recreation areas have also seen spruce mortality caused by spruce beetle. An integrated pest management approach was adopted in 2001 to minimize beetle impacts in and around these high value sites. The number of infested spruce at these sites has steadily decreased with the lowest level of infestation coming this year, Table 1. In late April 2005, an anti-aggregation pheromone (MCH) for spruce beetle was deployed in a grid pattern in each of the sites listed in Table 1.

Recreation site	Number of Infested Spruce Removed				# of New Infested Spruce
	2001	2002	2003	2004	2005
Shannon C.G.	56	12	27	5	0
Hospital Flat C.G.	93	6	20	8	1
Solider Creek C.G.	37	48	39	15	9
Columbine Admin Site	8	2	5	0	0
Columbine Summer Homes	50	6	23	9	0
	244	74	114	37	10



Current Situation. During this post treatment evaluation a 100 percent survey of spruce within and immediately adjacent to the above-mentioned sites was completed. There were only 10 currently infested spruce located at these site and only two of the five sites had spruce beetle activity. This level of beetle activity continues to follow a downward pattern and is at the lowest level over the past five years.

Recommendations. The 10 currently infested spruce should be removed from the sites this Fall to reduce the chance of developing brood emerging and attacking surrounding residual host trees. These trees were marked with orange paint for easy identification. Infested trees should either be removed from the site and placed at a lower elevation outside the range of the host type, burned on site to a point where the bark is removed or the bark peeled off all bole surfaces using a tool such as the log wizard. Stumps should be cut as low as possible and burned to kill developing brood. A portion of the spruce beetle population will migrate to the lower portion of the tree bole to avoid winter predation from woodpeckers and extreme low temperatures. This year's treatments coupled with diminishing spruce beetle populations have seen the lowest attack levels in several years. I would recommend that all the sites except Shannon C.G., and the Columbine Admin site be again treated in 2006 with MCH. If overall spruce beetle populations continue to decline around these sites this may be the last year treatment would be needed. However, that determination will be made next Fall.

Squirrel Midden Sites

Background. In the summer of 2004 forest fires burned through areas of Mt Graham Red Squirrel habitat causing concerns of increased bark beetle activity in scorched Douglas-fir trees. A survey of potentially susceptible midden sites was conducted in September of that year. The results of that survey indicated 23 midden sites within moderate to high susceptibility level to Douglas-fir beetle (DFB) attack. Again, an integrated pest management approach was adopted to minimize potential Douglas-fir mortality caused by the Douglas-fir beetle. In late April of 2005 the anti-aggregation pheromone, MCH, was deployed at a rate of 40 capsules per acre at each of the 23 midden sites identified for treatment. Later that summer, permanent plots were established at a random sub-sample of the treated midden sites. Permanent plots were also established at none treated burned sites. This network of plots will help determine the efficacy of the MCH treatments as well as help better determine possible stand characteristics that may be associated with Douglas-fir beetle outbreaks in the southwest once it occurs.

Current situation. Based on aerial detection surveys and ground observations, Douglas-fir beetle activity on the Pinaleno Mountains is at endemic levels. Within the treated midden sites there were no trees identifies with DFB, however there was little activity immediately outside the treated midden site as well. As of our survey on August 31, 2005 the populations of DFB have not responded to the abundant amount of scorch Douglas-fir from the 2004 fires on the mountain. This is not uncommon and it may take a couple years before beetle population start to increase if they do. There is also the chance that the abundant snow pack that was available this past winter has helps the scorched Douglas-fir positively respond, making it more difficult for DFB to successfully attack the scorched trees.

Recommendations. For the 2006 season I would recommend only treating the midden sites that were determined to be at high risk to DFB attack in the 2004 Fall survey. Treatments would consist of deploying the anti-aggregation pheromone, MCH, on a grid pattern on 4 acres around the midden site of concern. MCH would be applied at a rate of 40 capsules per acre. The high risk midden sites would include; CF-68, 14, MP – 65, 141, 113, 64, 140, 133, 124, and WP – 46. Because of an absence of DFB activity I feel the low to moderate risk midden sites would not experience beetle attacks at any substantial level in 2006.

Douglas-fir beetle flight periodicity. Because of the lack of Douglas-fir beetle flight periodicity data in the southern most reaches of its range in AZ, we began to monitor flight periods of this beetle in 2005. Bark beetle flight periodicity is typically measured using Lindgren® funnel traps with a beetle specific lure. Six 12-unit funnel traps were deployed in three pairs within the boundary of the Nuttall fire. Traps were baited with a commercially available DFB lure produced by Phero Tech, Inc. Beetles were collected weekly starting in early May through September. We are still in the process of counting the trap catches. However, this first year's data suggests that MCH treatments should be in place by mid-May. Additional years of flight monitoring are needed to account for year to year variability.

If you have any questions regarding my assessment or recommendations please let me know. I can be reached at 928-556-2073.

/s/ John Anhold
JOHN ANHOLD
Arizona Zone Leader Forest Health

cc:
Anne Casey
Lisa Angle
Craig P Wilcox
Randall A Smith
Robert Lefevre
Thomas Skinner
Leonard Lucero
Debra Allen-Reid